

oval or trough of barometric depression, whose longer axis extended, at midnight of the 31st, from northern Texas northeastward a thousand miles to the Straits of Mackinaw, being bounded on its southeast sides by a high pressure of 30.25 along the Atlantic coast, and on its northwest side by a high pressure of 30.55 in Dakota and Manitoba. The further history of this depression, which, subsequently, developed into a remarkable storm, belongs to the month of February.

Areas of High Barometer.—In general, these have not passed southward over the Mississippi valley so uniformly as was the case during December. The tropical area of highest pressure has, excepting two short intermissions, remained persistently off the South Atlantic coast.

No. I moved on the 3rd of January southward; was, on the morning of the 4th, over the Lake region, and, on the morning of the 5th, over New England, where its highest pressure was attained.

No. II appears on the morning of the 4th in the Southwest, whence it extended eastward, spreading over the Gulf and South Atlantic States, and, on the 7th, joined the area off the South Atlantic coast.

No. III appears, on the 9th, in Dakota, following the rising pressure on the Pacific coast of the preceding day; advanced south and then southeastward, and was, on the morning of the 11th, central over Arkansas and Tennessee. During the next three days, the pressure remained higher throughout the Mississippi valley than over the South Atlantic States; but, on the 14th, the pressure fell at the northern stations and rose at the southern, so that, on the morning of the 15th, the normal condition was again attained: the highest barometer being on the South Atlantic and diminishing thence to the west and northwest.

Nos. IV and V. On the 18th, the low barometer, No. VII, then central in upper Canada, had caused so great a depression throughout the Atlantic States that, on the morning of the 19th, the highest pressure, No. IV, is again found in Texas. During the next twenty-four hours, northerly winds and rising barometer prevailed from the Gulf States to Manitoba. During the 20th, area No. IV moved eastward to the South Atlantic coast, and a second area, No. V, very slowly southward over the Northwest. During the 21st, No. V extended eastward over British America, then southeastward over New England and over North Carolina, joined No. IV, which had remained over the South Atlantic States, leaving low barometer No. VIII to develop in the Missouri valley. On the 22nd, the advance of low barometer, No. VIII, again separated high pressures Nos. IV and V, which, on the morning of the 23rd, were, respectively, central off the South Atlantic and the Nova Scotia coasts.

No. VI formed in the northwest immediately in the rear of high barometer, No. VIII, and extended southward during the 23rd, with steadily increasing pressure in the Northwest. On the morning of the 24th the pressure was generally high, and northerly winds prevailed from the Alleghanies westward to the 100th meridian. The remnant of this area extended, on the afternoon of the 26th, along the Atlantic coast.

No. VIII, followed in the rear of low barometer No. XI; at midnight of the 28th, it extended from Dakota to Kansas; at midnight of the 29th, it was central in Illinois; at midnight of the 30th, it was off the east Atlantic coast. After which it remains as a ridge of high pressure, that extended at midnight of the 31st from Florida to Newfoundland.

TEMPERATURE OF THE AIR.

In general.—The distribution of mean temperatures for the month is shown by the isothermal lines upon Chart No. II. While the average temperature has been slightly below its normal value on the Pacific coast, it appears, in all other sections of the

country, to have been decidedly above, the excess amounting to 9° for Tennessee and the Ohio valley, and diminishing as we proceed thence in all directions, it being 7.°7 for the upper Mississippi, 6.°9 for the lower Missouri, 6.°4 for the Gulf and South Atlantic States, 4.°9 for the Upper Lakes, 5.°4 for the Lower Lakes, 3.°8 for the Middle and Eastern States, 3° for the St. Lawrence valley, 1.°5 for Minnesota.

It should, however, be stated that, although above the average and among the warmest months, yet the past January was, except, perhaps in Kansas, by no means the warmest January of which we have records; thus January, 1828, appears to have been warmer in Tennessee and throughout the Atlantic and Gulf States. The January of 1843 was warmer from New Jersey to Maine, but colder in the southern stations; January, 1855, was warmer in the West and Southwest; January, 1853, was warmer on the Pacific coast.

Maximum Temperatures.—The maximum temperature at Pembina was 34°; at Mount Washington, 41°; at Key West, 83°. The maximum of 70° has been reported from stations on the line passing through the centre of Kansas, the southern border of Wisconsin, the lower Ohio valley, the southwest border of Kentucky, and thence north to Erie, Pennsylvania, thence east and then south between Maryland and Delaware to Cape Charles.

Minimum Temperatures.—The minimum temperatures have been for northern stations: —43° at Pembina, D. T.; —30° at Mount Washington; —25° at Breckenridge; —17° at Yankton, and for southern stations, 58° at Key West; 43° at Galveston; 39° at New Orleans. Minimum temperatures of 20° have been reported from stations on the line passing through central Texas and Arkansas, the southeast corner of Tennessee and central North Carolina.

Ranges of Temperatures.—The least ranges of temperature have been: San Francisco, 22°; Key West, 24°; Galveston, 32°. The greatest ranges have been: Pembina, 77°; Yankton, 76°; Mt. Washington, 71°; Malone, 69°; North Platte, 68°; Evanston, 66°; Boston, Fort Dodge and Colorado Springs, 65°.

PRECIPITATION.

Rainfall.—Chart No. III shows the general distribution of precipitation for the month. The regions of unusually large rain or snow are: lower Ohio valley, central Mississippi, lower Arkansas and Red rivers. Deficiencies are reported throughout the Atlantic States.

Rainy days.—From ten to twelve rainy days are reported from Tennessee, the Ohio valley and Lake region and New England. From three to ten rainy days in the South Atlantic and Gulf States.

Cloudy days.—From eight to twelve cloudy days are reported from the South Atlantic and Gulf States, and from twelve to sixteen over the Lake region.

RELATIVE HUMIDITY.

The mean relative humidity for the month averages as follows: Breckenridge 53; Cape May and Cheyenne, 58; Colorado Springs, 39; at Denver, 41; Dodge City, 56; Albany, 85; Alpena, 81; Marquette, 82; Mount Washington, 90; Pembina, 92; Peck's Beech, 82; Rochester, 81.

WINDS.

Wind directions.—The prevailing winds are shown by the arrows upon Chart No. II, from which it will be seen that these have been southwest in the South Atlantic and Middle States, northwest in New England and the Upper Lake region, southerly in the Gulf States, Ohio and Missouri valleys.

Total movements.—The sum total of the movements of the air, from all directions, have been: Sandy Hook, 13,160; Erie, 12,991; Grand Haven, 11,762; Long Branch,